Heterostructures of low dimensional materials for electronic, spintronic and sensor applications

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DOI:
10.33612/diss.136292820

Publication date:
2020

Propositions belonging to the thesis:

Heterostructures of low dimensional materials for electronic spintronic and sensor applications

1- Thin magnetic films at the surface of magnetoimpedance sensors can be used to achieve a higher magnetoimpedance ratio. (Chapter 3 of this thesis)

2- Double or single peak magnetoimpedance response can be controlled via different magnetic exchange interactions between a thick magnetic ribbon and thin layers at the surface of the ribbon. (Chapters 3 and 4 of this thesis)

3- Spin-orbit torques can change the impedance of thick magnetic ribbons. (Chapter 4 of this thesis)

4- The relation between magnetic exchange interaction and spin-orbit torque can be studied via the magnetoimpedance effect. (Chapter 4 of this thesis)

5- Graphene-based materials can be used for modification of the magnetoimpedance sensor functionality. (Chapter 5 and 6 of this thesis)

6- The bipolar electrodeposition method can be used for the fabrication of semiconductive lateral heterostructures. (Chapter 7 of this thesis)

7- Introducing defects into 2D materials and oxidizing them can enable memristor applications. (Chapter 8 of this thesis)

8- The cyclic voltammetry measurement of electrochemical metallization memristors with a thick electrolyte layer can reveal redox reactions that occur at voltages higher than the switching voltage of a memristor. (Chapter 9 of this thesis)

9- Scientific research is one of the most addictive games which makes people forget to spend time with friends and family. It is important to come away from it sometimes if one does not want to look as if drowned in it.

10- Interaction with the scientific community is the best way to understand if we are on the right track in our research.